

## A NEW GENUS AND NEW SPECIES, COMBINATIONS AND RECORDS OF TEPHRITINAE (DIPTERA: TEPHRITIDAE) FROM AUSTRALIA, NEW ZEALAND AND THE SOUTH PACIFIC

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### Abstract

*Austrotephritis* gen. n. is described with 21 species included [all new combinations]: viz. *A. brunneimaculata* (Hardy) from Papua New Guinea, *A. fuscata* (Macquart), *A. transversa* (Hardy & Drew), *A. turneri* (Hardy & Drew) and *A. whitei* (Hardy & Drew) from Australia [all transferred from *Campiglossa* Rondani], plus *A. brunnea* (Hardy & Drew), *A. bushi* (Hardy & Drew), *A. distigmata* (Hardy & Drew), *A. hesperia* (Hardy & Drew), *A. pelia* (Schiner), *A. phaeostigma* (Hardy & Drew), *A. poenia* (Walker) [type species], *A. protrusa* (Hardy & Drew), *A. pumila* (Hardy & Drew), *A. quasiprolixa* (Hardy & Drew), *A. tasmaniae* (Hardy & Drew) and *A. trupanea* (Hardy & Drew) from Australia, and *A. cassinia* (Malloch), *A. marginata* (Malloch), *A. plebeia* (Malloch) and *A. thoracica* (Malloch) from New Zealand [all transferred from *Tephritis* Latreille]. *Hyalopeza aristae* sp. n., *Paraactinoptera danielsi* sp. n. and *Paraspathulina trimacula* sp. n. are described from southern Queensland. *Parahyalopeza multipunctata* sp. n. is described from Lord Howe Island. *Paraactinoptera prolixa* (Hardy & Drew), comb. n. and *Parahyalopeza pantosticta* (Hardy & Drew), comb. n. from Australia and *Sphenella fascigera* (Malloch), comb. n. from New Zealand are transferred from *Tephritis*. *T. pentagonella* (Bezzi) from Fiji is newly synonymised with *Scedella formosella* (Hendel) and *Dioxyna fouica* (Hering), comb. n. from Tonga is transferred from *Campiglossa*. The African *Pediapelta ternaria* (Loew) is newly recorded from SE Queensland.

### Introduction

Australasian fruit flies belonging to the subfamily Tephritinae were revised by Harrison (1959), Hardy (1985, 1988) and Hardy and Drew (1996). Further records were provided by Hancock and Drew (1994), Hancock and McGuire (2001) and Hancock (2001). Further investigation has revealed the need for a new genus to contain 21 species currently misplaced in *Campiglossa* Rondani or *Tephritis* Latreille, plus four new species in the endemic Australian genera *Hyalopeza* Hardy & Drew, *Paraspathulina* Hardy & Drew, *Paraactinoptera* Hardy & Drew and *Parahyalopeza* Hardy & Drew.

The following abbreviations have been used: BARS – Berrimah Agricultural Research Station, Darwin; MHNG – Museum d'Histoire Naturelle, Geneva; QDPI – Queensland Department of Primary Industries, Brisbane; QMB – Queensland Museum, Brisbane; UQIC – University of Queensland Insect Collection, Brisbane. Tribal classification follows Hancock (2001).

### Systematics

#### TRIBE CECIDOCHARINI

#### *Procecidochares alani* Steyskal

*Comments.* This species has been introduced into SE Queensland for the biological control of fireweed, *Ageratina riparia*. It differs from *P. utilis* Stone in details of the wing pattern; the preapical hyaline indentation in cell  $r_{2+3}$  crosses vein  $R_{4+5}$  into cell  $r_{4+5}$  in *P. alani* but not in *P. utilis*.



Tribe DITHRYCINI  
Subtribe PLATENSININA (= OEDASPIDINA)

*Oedaspis* group of genera

***Hyalopeza aristae* sp. n.**

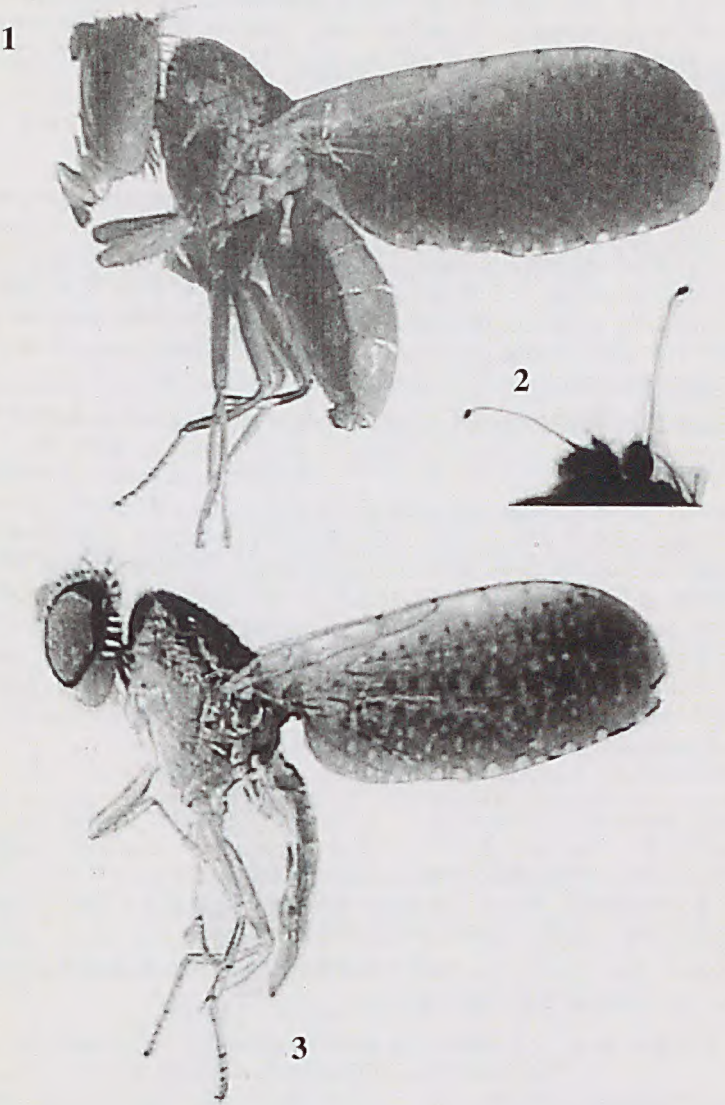
(Figs 1-3)

*Types. Holotype* ♂, AUSTRALIA: SE Queensland: 25°36'S, 149°46'E, Taroom, 6 km N on Hwy, 200 m, 22.v.1999, C.J. Burwell, sweep, *Cadellia pentastylis*, Simaroubaceae, 50099 (in QMB, Reg. No. T 99154). *Paratype* ♀, 25°27'S, 151°23'E, Gurgeena Plateau, 8.vi.1999, C.J. Burwell, 360 m, vinescrub sweeping, 50110 (in QMB, Reg. No. T 99155).

*Description.* Male (Fig. 1). Length of body 4.5 mm, of wing 4.5 mm. Head higher than long, subrectangular, mostly yellow, blacker on occiput above neck. Frons broad and flat, with pale pubescence; lunule very short; face white, very gently convex, almost flat, barely projecting at epistome; antennae whitish, short and relatively small, situated at upper quarter of head on plane of frons; third segment apically rounded; arista very short pubescent, with a black spatulate expansion at apex (Fig. 2); a dark spot present between antennal base and eye margin; mouthparts capitate. Setae: 3 pairs of brown frontals on dark bases; 2 pairs of reclinate orbitals, the anterior pair brown, the posterior pair white; ocellars distinct and brown; medial vertical long and brown; lateral vertical white and comparatively long (about 0.55 length medial vertical); postocellar, paraverticilar and postocular setae all white and thickened, a few pale, thin postocular setae among the larger ones; lower occipital and genal margins with long pale hairs, shorter and darker below eye; no distinct genal seta.

Thorax mostly fulvous; scutum brown with grey tomentosity and coarse white pubescence; brown around setal bases. Postpronotal lobes and notopleural calli yellow. Setae brown and distinct: 1 postpronotal, 2 notopleural, 1 presutural, 1 supra-alar, 1 postalar, 1 intra-alar, 2 anepisternal, 1 anepimeral, 1 katepisternal, 1 pair prescutellar acrostichal, 1 pair dorsocentral, placed a little anterior to line of supra-alars; 4 scutellars, the apicals about 0.6 length of basals and crossed. Scutellum fulvous, with pale pubescence dorsolaterally; subscutellum and mediotergite blackish-brown. Haltere whitish, with a brown stripe over apex. Legs fulvous; fore femur with dorsal and ventral rows of long fulvous setae; mid femur with a distinct postmedial fulvous seta; mid tibia with an apical brown spine.

Wing elongate, the costal and posterior margins subparallel. Costa with 1 short and 1 shorter black spines above apex of vein Sc; no gap in setae on dorsal side of vein R<sub>1</sub> opposite apex of vein Sc; vein R<sub>4+5</sub> bare; R-M crossvein situated near apical 0.75 of cell dm, beyond apex of cell sc and about 1.5 times its own length from DM-Cu crossvein, which is outwardly convex; cell bcu with a short apical extension; vein A<sub>1</sub>+Cu<sub>2</sub> ending just before wing margin. Wing hyaline in cells bc, c, sc and upper half of r<sub>1</sub>, except for brown



Figs. 1-3. *Hyalopeza aristae* sp. n. (1) male; (2) aristae; (3) female.



costal spots in middle of cell c, at base and apex of cell sc and at 3 points in cell r<sub>1</sub>, the latter connected weakly with the dark discal pattern; pattern in anterior half of wing yellow with brown spots along veins, becoming brown with yellow spots posteriorly and apically; posterior margin with 4-6 small hyaline spots in anal lobe, 5 in cell cu<sub>2</sub> and 3 in cell m; alula and anal lobe largely brown.

Abdomen shining fulvous, with fine, dark, scattered pubescence. Male epandrium and surstyli fulvous; aedeagus not studied.

Female (Fig. 3). As for male except arista without spatulate apex, brown genal seta present, brown anterior orbital seta much longer than white posterior seta, mouthparts vestigial, mid femur without subapical seta, crossvein DM-Cu less curved and placed a little further from R-M crossvein and the hyaline spots in anal lobe of wing submarginal rather than marginal. Tergite VI a little shorter than tergite V; oviscape broad, orange-brown with black apical margin, about 0.75 length of terga V+VI combined.

*Etymology.* The name 'aristae' refers to the spatulate apex of the arista.

*Distribution.* Only known from southeast Queensland.

*Comments.* In wing shape and pattern this species resembles the Afro-Asian genus *Elaphromyia* Bigot but other characters place it with *Hyalopeza schneiderae* Hardy & Drew in the *Oedaspis* group of genera (Hancock 2001). *H. aristae* differs from *H. schneiderae* in the taller head, presence of a spatulate arista in males, details of the wing pattern and fulvous rather than black abdomen. A spatulate male arista is seen also in the African *Orthocanthoides aristae* Freidberg but the two taxa are not related. Although the differences are significant, erection of a further monotypic genus does not appear warranted at the present time.

#### *Oedaspis australis* (Malloch)

*Material examined.* AUSTRALIA: 1 ♂, 4 ♀♀, C Qld, Mt Moffatt Nat. Park, 18.xii.1995, C.J. Burwell & 26-29.xi.1997, J. Skevington, S. Evans & C. Lambkin, malaise (QMB); 1 ♂, C Qld, 55 km E of Morven, 26°27'S, 147°38'E, 10.ix.1989, E. Exley, G. Daniels & C. Burwell, on *Acacia maranoensis* (UQIC); 1 ♀, SE Qld, Acacia Ridge, Brisbane, 14.viii.1966, I.D. Galloway (UQIC).

*Comments.* This species was transferred from *Hendrella* Munro by Hancock (2001). Its host plant remains unknown.

#### *Platensina* group of genera

#### *Collessomyia setiger* Hardy & Drew

*Material examined.* AUSTRALIA: 1 ♂, C Qld, 6 km N of Taroom, 25°36'S, 149°46'E, 200 m, 11.ix.1992, G. Daniels (UQIC); 1 ♂, Northern Territory, Alice Springs, 21.xi.2002, R. Smith, ex cue lure trap (BARS).

*Comments.* The above are additional Queensland and Northern Territory locality records for this endemic Australian species.

*Platensina amplipennis* (Walker)

*Material examined.* AUSTRALIA: 1 ♂, NE Qld, 8 km N of Ellis Beach [Cairns district], 25.iv.1998, C.J. Burwell (QMB); 1 ♀, NE Qld, Dunk I., 21-23.v., A.J. Turner (QMB).

*Comments.* This widespread species is known from several localities in northern and central Queensland.

*Platensina zodiacalis* (Bezzi)

*Material examined.* AUSTRALIA: 1 ♂, SE Qld, Glasshouse Mts., 10.viii.1913 (UQIC).

*Comments.* The above is the fourth Australian record for this widespread species and extends its distribution south to SE Queensland.

TRIBE SCHISTOPTERINI

*Calloptera crockeri* (Curran)

*Comments.* This New Guinea to Solomon Islands species was transferred from *Rhabdochaeta* de Meijere to *Calloptera* Freidberg by Freidberg (2002). The host plant is *Melanthera* [formerly *Wedelia*] *biflora* (Asteraceae) (Hancock and McGuire 2001).

*Calloptera guamae* (Malloch)

*Comments.* This Micronesian species was transferred from *Rhabdochaeta* to *Calloptera* by Freidberg (2002).

*Calloptera queenslandica* (Hardy & Drew)

*Comments.* This Australian species was transferred from *Rhabdochaeta* to *Calloptera* by Freidberg (2002).

*Calloptera wedelia* (Hardy & Drew)

*Comments.* This Australian species was transferred from *Rhabdochaeta* to *Calloptera* by Freidberg (2002). The host plant is '*Wedelia* sp.' [probably *Melanthera biflora*].

*Rhabdochaeta pulchella* de Meijere

*Comments.* This widespread Oriental species is known so far only from the Kuranda district (NE Qld) in Australia. The host plant is *Blumea lacera* (Asteraceae) (Hendel 1915, Hardy 1985).

*Rhochmopterum venustum* de Meijere

*Material examined.* AUSTRALIA: 1 ♀, N Qld, 5 km S of Coen, 6.xi.1978, E.M. Exley & K. Walker, on *Eucalyptus confertifolia* (UQIC); 1 ♂, SE Qld, 12 km N of Boonah, 27°54'S, 152°42'E, 140 m, 1.ii.1999, C.J. Burwell, sweeping open forest (QMB).

*Comments.* The above localities for this widespread species are additional to those listed by Hardy and Drew (1996).



## Tribe TEPHRELLINI

*Sphaeniscus* group of genera*Pediapelta ternaria* (Loew)

(Fig. 4)

*Material examined.* AUSTRALIA: 1 ♀, SE Qld, Mt Coot-tha, Brisbane, 27.29S, 152.57E, 28.x.2002 / 26, Merz, Földvari & McNeil, dry sclerophyll forest (MHNG).

*Comments.* This small black species is newly recorded from Australia. In wing pattern (Fig. 4) it resembles *Australasinia sexincisa* (Malloch) but lacks the dark medial band in cell c; in addition, the head setae are all dark, the scutum has a bronzy sheen and black postpronotal lobes, there are 4 long scutellar setae and there is a broad gap in the setae on the upperside of vein R<sub>1</sub> opposite the apex of vein Sc. *Pediapelta* Munro keys imperfectly to *Paraspathulina* in Hardy and Drew (1996), differing in the entirely dark wing apex and longer apical scutellar setae. *P. ternaria* is widespread in Africa (Munro 1947) and appears to have been introduced into SE Queensland. Host plants are likely to be species of Lamiaceae.

*Sphaeniscus atilius* (Walker)

*Material examined.* AUSTRALIA: 1 ♂, NE Qld, Iron Range, Cape York Peninsula, 16-23.xi.1965, G. Monteith; 2 ♂♂, 2 ♀♀, NE Qld, Gap Ck, 6 mls N of Bloomfield R., 13-14.xi.1965, G. Monteith; 1 ♂, SE Qld, Jondaryan, 27.v.1963, C. Speed; 1 ♂, SE Qld, Jamboree Heights, Brisbane, 25.iii.2001, G. Daniels; 1 ♂, NSW, 25 km W of Grafton, 1.xii.1990, G. Daniels (all UQIC); 1 ♂, NSW, Tooloom, i.1926, H. Hacker (QMB). PAPUA NEW GUINEA: 1 ♀, East New Britain Province, Bainings Mts, 1160 m, Raunsepna, 8.vii.1998, L. LeBlanc *et al.* (QDPI).

*Comments.* This widespread species is newly recorded from the Bismarck Archipelago. The above localities include the first published Queensland records. Previous Australian records were listed by Hancock and McGuire (2001). Host plants are species of Lamiaceae.

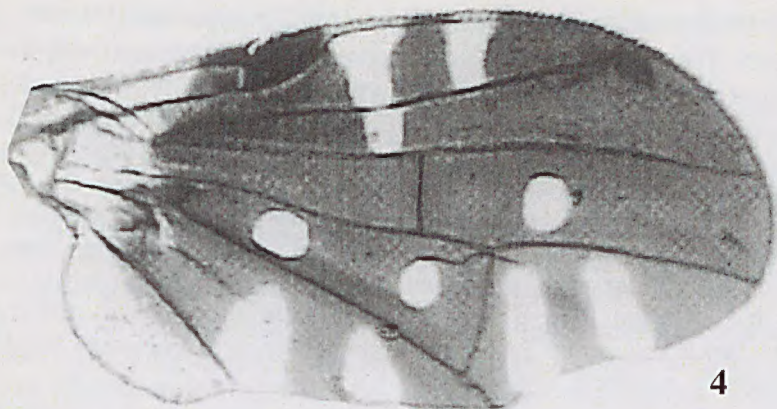
## Tribe TEPHRITINI

*Campiglossa* group of genera*Campiglossa vaga* Hardy & Drew

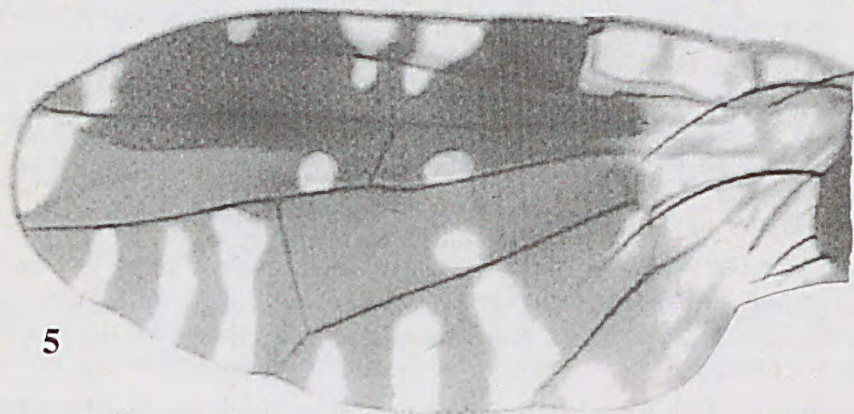
*Comments.* Most Australian species placed in *Campiglossa* by Hardy and Drew (1996) do not agree with the current concept of that genus (see Merz 1994) and are referred here to *Austrotephritis* gen. n. The wing pattern of the sole remaining species, *C. vaga*, resembles that of *Scedella infrequens* (Hardy & Drew), but it is retained in *Campiglossa* pending study of the male terminalia. It is known only from the Tambo District, southern Queensland.

*Dioxyna fouica* (Hering), comb. n.

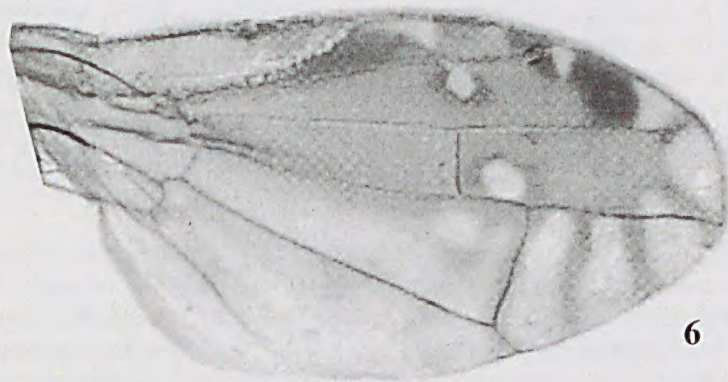
*Comments.* This Tongan species is transferred from *Campiglossa*. It is closely related to the Australian *D. hyalina* Hardy & Drew, differing in the dark wing patch from the pterostigma extending to vein R<sub>4+5</sub>. A record of '*D. brachybasis*' from Fiji (Hancock and Drew 1994) also belongs here.



4



5



6

**Figs. 4-6.** Wings. (4) *Pediapelta ternaria*; (5) *Paraspathulina trimacula* sp. n.; (6) *Paraactinoptera danielsi* sp. n.



*Mesoclanis magnipalpis* (Bezzi) and *Mesoclanis polana* (Munro)

*Comments.* These two species were introduced into southern and eastern Australia, respectively, from Africa during the 1990s for the biological control of *Chrysanthemoides monilifera* ssp. *monilifera* (boneseed) and *rotundata* (bitou bush) (Edwards *et al.* 1999). *Mesoclanis* Munro keys to aberrant *Dioxyna* Frey in Hardy and Drew (1996), differing primarily in the darker wing base and pattern and relatively long apical scutellar setae. The mouthparts are conspicuously geniculate. *M. polana* differs from *M. magnipalpis* in the less distinct medial and dorsolateral brown stripes on the scutum and in wing pattern details, particularly the isolated rather than reticulate dark spots in cell  $cu_2$  and the broader hyaline area in the basal half of cell  $dm$  (Munro 1950).

*Scedella formosella* (Hendel)

*Comments.* This widespread species is known from Micronesia, New Guinea (including Bismarck Archipelago) and Solomon Islands in the SW Pacific but has not been recorded from Australia. It also occurs in Fiji; *Euribia pentagonella* Bezzi, currently included in *Tephritis*, is placed here as a new synonym of *S. formosella*. It breeds in the flowerheads of *Melanthera biflora* and the ovipositor is shorter than in the similar *S. orientalis* (de Meijere).

*Spathulina* group of genera*Paraspathulina trimacula* sp. n.

(Fig. 5)

*Type.* Holotype ♂, AUSTRALIA: SE Queensland, Mt Coot-tha, Brisbane, 27.29S, 152.57E, 28.x.2002 / 26, Merz, Földvari & McNeil, dry sclerophyll forest (in QMB, Reg. No. T 99156).

*Description.* Male. Length of body 2.6 mm, of wing 2.8 mm. Head quadrate, mostly yellow. Frons sloping; lunule short; face gently concave and slightly projecting at epistome; antennae situated at middle of head; third segment large, orange, slightly produced dorsoapically; arista very short pubescent; mouthparts capitate. Setae: 2 pairs of black frontals; 2 pairs of reclinate orbitals, the anterior pair black, the posterior pair shorter and white; ocellars distinct and black; medial vertical long and black; postocellar, paravertical, short lateral vertical and postocular setae all white and thickened; a few black, thin postocular setulae among the larger ones; genal seta fulvous.

Thorax with dense grey tomentosity and coarse white pubescence on scutum; brown around setal bases. Postpronotal lobes and notopleural calli yellow. Setae mostly black and distinct: 1 postpronotal, 2 notopleural (posterior fulvous), 1 presutural, 1 supra-alar, 1 postalar, 1 intra-alar, 2 anepisternal (lower whitish), 1 anepimeral (whitish), 1 katepisternal, 1 pair prescutellar acrostichal, 1 pair dorsocentral placed just behind suture; 4 scutellars, the apicals about 0.3 length of basals and crossed. Scutellum grey-brown with fulvous apex; subscutellum and mediotergite black. Haltere yellow.



Legs fulvous; fore femur with a ventral row of fulvous setae; mid tibia with an apical brown spine, hind femur with a dorsal preapical seta.

Wing (Fig. 5) of normal shape. Costa with one long black spine above apex of vein Sc; a broad gap in the setae on dorsal side of vein R<sub>1</sub> opposite apex of vein Sc; vein R<sub>4+5</sub> with 1 seta at base; R-M crossvein situated near apical 0.7 of cell dm, beyond apex of cell sc and about 1.5 times its own length from DM-Cu crossvein, which is straight; cell bcu with a broad apical extension; vein A<sub>1</sub>+Cu<sub>2</sub> ending just before wing margin. Wing hyaline basally except for faint brown costal band in middle of cell c; pattern brown in apical two-thirds with 3 hyaline indentations in cell r<sub>1</sub>, the basal pair extending into cell R<sub>2+3</sub>, the outer spot subapical; cell r<sub>2+3</sub> with a hyaline subapical band, leaving apex with an isolated brown spot, cell r<sub>4+5</sub> with a hyaline apical spot; cells r<sub>4+5</sub> and br with a round hyaline spot either side of R-M crossvein, cell dm with a round hyaline posteromedial spot, cells m and cu<sub>2</sub> each with 3 hyaline indentations crossing cells, anal cell with a hyaline subapical spot.

Abdomen shining black, covered with fine black pubescence; terga I+II with greyish tomentosity.

*Etymology.* The name 'trimacula' is derived from the 3 hyaline indentations in each of cells r<sub>1</sub>, m and cu<sub>2</sub>.

*Distribution.* Only known from southeast Queensland.

*Comments.* *P. trimacula* differs from *P. apicomacula* Hardy & Drew and *P. eremostigma* Hardy & Drew in wing pattern; in the latter two species there are only 2 hyaline indentations in each of cells r<sub>1</sub>, m and cu<sub>2</sub> and the hyaline spots in cells br and dm are not round and isolated.

### *Spathulina acroleuca* (Schiner)

*Material examined.* AUSTRALIA: 1 ♂, 3 ♀♀, NE Qld, Manoora, Cairns, 1.xi. & 31.xii.2001, D. L. Hancock, swept from flowers of *Wedelia trilobata* (QDPI Cairns). PAPUA NEW GUINEA: 1 ♀, Morobe Province, 10 km W of Lae, nr Markam R., banana plantation, 10-16.vii.1999, Yeates *et al.*, malaise, lowland rainforest (QMB).

*Comments.* This species is widespread throughout the Pacific. Although not reared from it, *Wedelia trilobata* is a likely addition to the host plants listed by Hancock *et al.* (2000).

### *Sphenella* group of genera

#### *Sphenella fascigera* (Malloch), comb. n.

*Comments.* This New Zealand species is transferred from *Tephritis*. It differs from the Australian *S. ruficeps* (Macquart) in the more extensively patterned wing, in particular the much larger apical brown area and dark transverse band from pterostigma to cell cu<sub>2</sub>, as illustrated by Harrison (1959). *S. fascigera* is widespread in New Zealand and breeds in flowerheads of *Senecio kirkii* (Harrison 1959).

*Tephritis* group of genera  
*Austrotephritis* gen. n.

Type species *Trypeta poenia* Walker, 1849, by present designation.

*Diagnosis.* Head quadrate with frons bare and epistome protruding; mouthparts often elongate but not geniculate, the labella fleshy and about half length of head; third antennal segment slightly produced dorsoapically; arista short pubescent; 2 pairs of frontal and 2 pairs of reclinate orbital setae, the upper orbital white and shorter than the anterior orbital, the others dark; short lateral vertical and postocular setae white and thickened and small dark setulae usually present among postocular row; scutum and abdomen densely tomentose although often with brown vittae on scutum and large brown submedian patches on abdomen; dorsocentral setae on or just behind suture; wing pattern dark with numerous hyaline spots and indentations of varying sizes, often with an isolated brown spot at apex of vein  $R_{4+5}$  but if stellate then without an apical fork; upperside of vein  $R_1$  usually with a bare, non-setose area below end of vein Sc but setae present in some species; 4 scutellar setae, the apical pair less than half length of basals; surstylus inwardly curved; distiphallus non-spinose; glans with large sclerotised internal structure and a short vesica; aculeus short and apically pointed; spermathecae tuberculate and elongate, often club-shaped.

*Comments.* This genus includes 21 species from Australia, New Zealand and Papua New Guinea, formerly misplaced in *Campiglossa* or *Tephritis*, plus Hardy and Drew's (1996) '*Tephritis* sp. A'. It differs from *Campiglossa* in the shorter, fleshier labella, size and arrangement of the hyaline wing spots in apical portion of cells  $r_{2+3}$  and  $r_{4+5}$ , elongate spermathecae, non-spinose distiphallus and well sclerotised but relatively simple glans. This largely conforms with the differences between *Campiglossa* and *Tephritis* noted by Merz (1994) and at first impression these species might seem to belong to the latter genus; however, the male glans is very different from the poorly sclerotised structure with a long apical filament and long vesica seen in *Tephritis* (c.f. Hardy and Drew 1996, fig. 227 and Merz 1994, figs 22a-f).

Hardy and Drew (1996) separated their *Campiglossa* species from those they included in *Tephritis* on the basis of the more widely spaced antennal bases, but this does not appear to be a character useful for generic separation and is intermediate in *A. whitei* (Hardy & Drew). Those species formerly placed in *Campiglossa* (except *C. vaga* which is retained there provisionally) resemble several formerly placed in *Tephritis* [in particular *A. poenia* (Walker) and *A. protrusa* (Hardy & Drew)] in wing pattern and in having 3-5 brown vittae on the scutum, brown submedial markings on abdominal terga III-V [or III-VI], dark spots around the bases of several scutal setae and a dorsal preapical seta on the hind femur. These species in turn share similarities with other species formerly placed in *Tephritis* (except *T. furcata* Hardy & Drew), particularly in the elongate shape of the spermathecae and structure of the male glans.



*Austrotephritis* appears to be most closely related to *Parahyalopeza* and *Paraactinoptera*, all having similarly-shaped spermathecae and a well sclerotised male glans. It differs in the slightly angulate third antennal segment, in having the wing pattern neither uniformly spotted nor stellate with an apical fork and in details of the male glans, the apical region less conspicuously sclerotised and the vesica better developed. As with *Parahyalopeza* and *Paraactinoptera*, host plants are frequently species of *Helichrysum* (Asteraceae: Inuleae).

*Austrotephritis brunnea* (Hardy & Drew), comb. n.

*Comments.* This SE Australian species is transferred from *Tephritis*. Recorded host plants are species of *Senecio* and *Vittadinia*.

*Austrotephritis brunneimaculata* (Hardy), comb. n.

*Comments.* This Papua New Guinea species, described in *Paroxyna* by Hardy (1988) and closely related to *A. fuscata*, is transferred from *Campiglossa*.

*Austrotephritis bushi* (Hardy & Drew), comb. n.

*Comments.* This SE Australian species is transferred from *Tephritis*. It is related to *A. brunnea* and has been bred from *Celmisia longifolia*.

*Austrotephritis cassinia* (Malloch), comb. n.

*Comments.* This New Zealand species is transferred from *Tephritis*. It is related to *A. transversa* and is associated with *Cassinia* sp.

*Austrotephritis distigmata* (Hardy & Drew), comb. n.

*Comments.* This Western Australian species is transferred from *Tephritis*. It is related to *A. brunnea*.

*Austrotephritis fuscata* (Macquart), comb. n.

*Material examined.* AUSTRALIA: 1 ♂, NE Qld, Windsor Tableland, barracks, 16°16'S, 145°03'E, 1060 m, 23-24.xi.1997, C.J. Burwell; 1 ♂, C Qld, Mt Moffatt Nat. Park, Marlong Arch, 24°59'S, 147°54'E, 820 m, 21.xi.1995, C.J. Burwell; 1 ♀, C Qld, Charleville, 13.ix.1920 (all QMB).

*Comments.* The above records of this eastern Australian species are the first from central and northern Queensland. It is transferred from *Campiglossa*. Recorded host plants are *Atalaya*, *Helichrysum*, *Senecio* and *Vittadinia*.

*Austrotephritis hesperia* (Hardy & Drew), comb. n.

*Comments.* This Western Australian species is transferred from *Tephritis*.

*Austrotephritis marginata* (Malloch), comb. n.

*Comments.* This New Zealand species is transferred from *Tephritis*. It is closely related to *A. cassinia*.

*Austrotephritis pelia* (Schiner), comb. n.

*Comments.* This widespread Australian species is transferred from *Tephritis*. It has been bred from *Chrysocephalum apiculatum*.

*Austrotephritis phaeostigma* (Hardy & Drew), comb. n.

*Comments.* This southern Australian species is transferred from *Tephritis*. It is related to *A. brunnea* and has been bred from *Olearia* spp.

*Austrotephritis plebeia* (Malloch), comb. n.

*Comments.* This New Zealand species is transferred from *Tephritis*. It is related to *A. fuscata*.

*Austrotephritis poenia* (Walker), comb. n.

*Comments.* This widespread Australian species is transferred from *Tephritis*. Its host plants include *Chrysocephalum* and *Helichrysum*.

*Austrotephritis protrusa* (Hardy & Drew), comb. n.

*Material examined.* AUSTRALIA: 5 ♂♂, 3 ♀♀, NE Qld, Mt Finnigan summit, slabs, 15°49'S, 145°17'E, 1100 m, 20-21.xi.1998, C.J. Burwell (QMB).

*Comments.* Mt Finnigan [S of Cooktown] is the northernmost record for this species, known as far south as northern New South Wales. It is transferred from *Tephritis* and breeds in *Helichrysum bracteatum* and *H. rupicola*.

*Austrotephritis pumila* (Hardy & Drew), comb. n.

*Comments.* This widespread Australian species is transferred from *Tephritis*. It is related to *A. hesperia* and its many host plants include *Helichrysum*.

*Austrotephritis quasiprolixa* (Hardy & Drew), comb. n.

*Material examined.* AUSTRALIA: 5 ♂♂, 9 ♀♀, NSW, Moonbi Lookout, via Moonbi, 30°59'S, 151°05'E, 25.ix.1995, C.J. Burwell (QMB).

*Comments.* This species is known from South Australia and New South Wales and is transferred from *Tephritis*. It is related to *A. brunnea*.

*Austrotephritis tasmaniae* (Hardy & Drew), comb. n.

*Comments.* This Tasmanian species is transferred from *Tephritis*. It is related to *A. brunnea*.

*Austrotephritis thoracica* (Malloch), comb. n.

*Comments.* This New Zealand species is transferred from *Tephritis*. It is closely related to *A. transversa*.

*Austrotephritis transversa* (Hardy & Drew), comb. n.

*Comments.* This SE Australian species is transferred from *Campiglossa*. It breeds in flowerheads of *Helichrysum* sp.

*Austrotephritis trupanea* (Hardy & Drew), comb. n.

*Comments.* This widespread Australian species is transferred from *Tephritis*. It is related to *A. hesperia* and breeds in *Celmisia*, *Olearia* and *Podolepsis*.

*Austrotephritis turneri* (Hardy & Drew), comb. n.

*Comments.* This Western Australian species, closely related to *A. fuscata*, is transferred from *Campiglossa*.



*Austrotephritis whitei* (Hardy & Drew), comb. n.

*Comments.* This Tasmanian species, closely related to *A. transversa*, is transferred from *Campiglossa*.

*Paraactinoptera danielsi* sp. n.

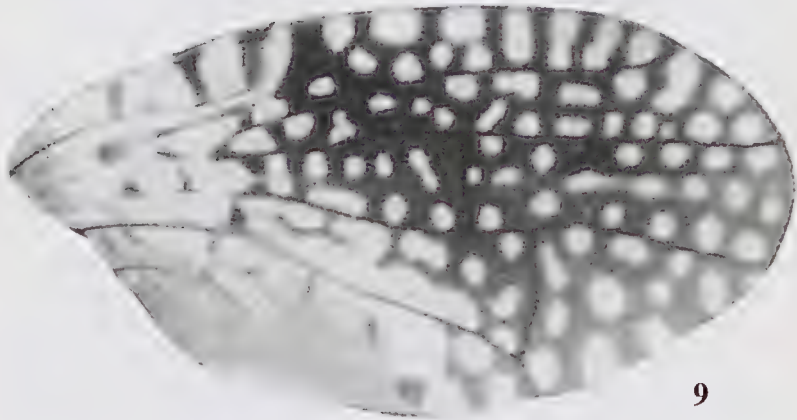
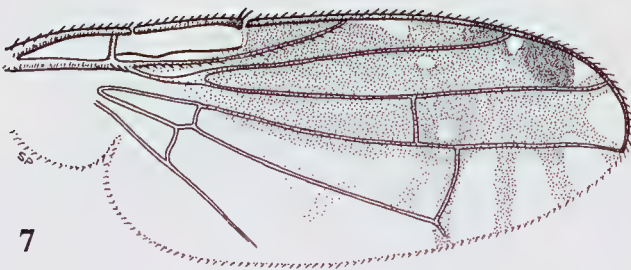
(Figs 6-8)

*Types.* *Holotype* ♂, AUSTRALIA: SW Queensland: Paroo River, Eulo, 28°09'S, 145°02'E, 25.ix.1991, 130 m, G. Daniels, on *Pluchea baccharoides* (in QMB, Reg. No. T 99157). *Paratypes*: 9 ♂♂, 1 ♀, same data as holotype (UQIC); 1 ♂, Nine mile bore, 16 km E of Eulo, 28°07'S, 145°11'E, 25.ix.1991, 175 m, G. Daniels, on *Acacia victoriae* (UQIC).

*Description.* Male. Length of body 3.0 mm, of wing 3.0 mm. Head almost quadrate, mostly yellow. Frons sloping; lunule short; face gently concave and slightly projecting at epistome; antennae situated at middle of head; third segment apically rounded; arista very short pubescent; mouthparts capitate. Setae: 2 pairs of brown frontals; 2 pairs of reclinate orbitals, the anterior pair brown, the posterior pair shorter and white; ocellars distinct and brown; medial vertical long and brown; postocellar, paravertical, short lateral vertical and postocular setae all white and thickened; genal seta fulvous.

Thorax with dense grey tomentosity and coarse white pubescence on scutum; brown around setal bases. Postpronotal lobes and notopleural calli yellow. Setae mostly brown and distinct: 1 postpronotal. 2 notopleural (posterior white and thickened), 1 presutural, 1 supra-alar, 1 postalar, 1 intra-alar, 3 anepisternal (lower 2 pale), 1 anepimeral (whitish), 1 katepisternal, 1 pair prescutellar acrostichal, 1 pair dorsocentral, placed anterior to line of supra-alars and just behind suture; 2 scutellars, the apicals absent. Scutellum grey-tomentose; subscutellum and mediotergite grey-tomentose. Haltere yellow. Legs fulvous; fore femur with a ventral row of fulvous setae; mid tibia with an apical brown spine.

Wing (Figs 6-7) of normal shape. Costa with a pair of distinct black spines above apex of vein Sc; a broad gap in the setae on dorsal side of vein R<sub>1</sub> opposite apex of vein Sc; vein R<sub>4+5</sub> bare; R-M crossvein situated near apical 0.8 of cell dm, beyond apex of cell sc and about its own length from DM-Cu crossvein, which is straight; cell bcu with a short, broad apical extension; vein A<sub>1</sub>+Cu<sub>2</sub> ending well before wing margin. Wing largely hyaline basally and posteriorly; anterior half with a broad orange-yellow area extending weakly into cell dm and including pterostigma; with a subtriangular hyaline patch in cell r<sub>1</sub> just beyond pterostigma and a hyaline spot diagonally below it in cell r<sub>2+3</sub>; and another diagonally below that in cell r<sub>4+5</sub> near apex of cell dm; a blackish-brown mark across apex of cell r<sub>1</sub> and a larger, rounded subapical patch in cell r<sub>2+3</sub>, separated by a hyaline spot; wing apex hyaline with 2 dark rays from discal patch across apices of veins R<sub>4+5</sub> and M; cell M hyaline with 2 rays to posterior wing margin, weaker posteriorly; diffuse dark ray near apex of cell dm and a diffuse dark patch across vein Cu<sub>1</sub> in cells dm and cu<sub>2</sub>.



**Figs. 7-9.** Wings and male genitalia. (7-8) *Paraactinoptera danielsi* sp. n.: (7) wing; (8) male genitalia; (9) *Parahyalopeza multipunctata* sp. n., wing.



Abdomen densely grey-tomentose, covered with coarse pale pubescence. Male genitalia (Fig. 8) with aedeagus distinctive; epandrium oval with well developed prenisetae and inwardly curved surstylus; distiphallus short, dilated towards glans and without spines or protuberances; glans with well marked internal sclerotisations and a long, broad, curved (but not spine-like) apical protuberance; vesica not evident.

Female. As for male. Oviscape short, black [abdomen damaged posteriorly].

*Etymology.* This species is named after Greg Daniels, who collected the type series and has made many contributions to the study of Australian Diptera.

*Host plant.* Not reared; all but one of the type series were collected on *Pluchea baccharoides* (Asteraceae: Inuleae) and this is a likely host.

*Distribution.* Only known from the Eulo district in SW Queensland.

*Comments.* This species differs from the more westerly *P. collessi* Hardy & Drew and *P. prolixa* (Hardy & Drew) in the wing pattern, which is largely orange-yellow with reduced hyaline markings in cell  $r_1$  in *P. danielsi* and brown with large hyaline markings in cell  $r_1$  in the other two species. It also differs from *P. prolixa* in lacking apical scutellar setae and from *P. collessi* in the darker scutum and scutal setae.

*Paraactinoptera prolixa* (Hardy & Drew), comb. n.

*Comments.* This central Australian species is transferred from *Tephritis*. Despite the presence of weak apical scutellar setae, it resembles other species of *Paraactinoptera* in the stellate, apically forked wing pattern and structure of the male glans and is better placed there than in *Austrotephritis*. It has been bred from *Helichrysum apiculatum*.

*Parahyalopeza bushi* Hardy & Drew

*Comments.* This species is known only from Victoria, where it breeds in *Helichrysum dendroideum*. *Parahyalopeza* differs from *Austrotephritis* and *Paraactinoptera* in the extensively spotted wing pattern, lack of an apical extension to cell  $bcu$  and details of the male glans. All three included species have a dark pterostigma with a hyaline base and round subapical spot.

*Parahyalopeza multipunctata* sp. n.

(Fig. 9)

*Type.* Holotype ♂, AUSTRALIA: Lord Howe Island, NSW, Mt Lidgebird, Goathouse, 400 m, 31°34'S, 159°05'E, 18.xii.1991, D. Burckhardt #4 (in QMB, Reg. No. T 99158).

*Description.* Male. Length of body 3.0 mm, of wing 3.0 mm. Head subquadrate, mostly greyish-white. Frons bare and almost flat, mostly fulvous, paler medially and greyish laterally; lunule short; face whitish, gently concave and slightly projecting at epistome; antennae situated at upper half of head; third segment large, orange, apically rounded; arista very short pubescent;

mouthparts capitate. Setae: 2 pairs of black frontals; 2 pairs of reclinate orbitals, the anterior pair black, the posterior pair shorter and white; ocellars distinct and black; medial vertical long and black; postocellar, paravertical, short lateral vertical and postocular setae all white and thickened; genal seta red-brown.

Thorax with dense blue-grey tomentosity and fine, shining but dark pubescence on scutum; brown around setal bases. Postpronotal lobes and notopleural calli yellow. Setae mostly black and distinct: 1 postpronotal. 2 notopleural (posterior thick and white), 1 presutural, 1 supra-alar, 1 postalar, 1 intra-alar, 1 anepisternal, 1 anepimeral (pale), 1 katepisternal (pale), 1 pair prescutellar acrostichal, 1 pair dorsocentral, placed anterior to line of supra-alar and just behind suture; 4 scutellars, the apicals about 0.3 length of basals. Scutellum blue-grey; subscutellum and mediotergite black. Haltere yellow. Legs fulvous; fore femur with dorsal and ventral rows of fulvous setae; mid tibia with an apical brown spine.

Wing (Fig. 9) of normal shape. Costa with a pair of short black spines above apex of vein Sc; a broad gap in the setae on dorsal side of vein R<sub>1</sub> opposite apex of vein Sc; vein R<sub>4+5</sub> bare; R-M crossvein situated near apical 0.8 of cell dm, beyond apex of cell sc and less than its own length from DM-Cu crossvein, which is slightly curved outwards; pterostigma about as long as broad; cell bcu without an acute apical extension; vein A<sub>1</sub>+Cu<sub>2</sub> ending well before wing margin. Wing largely hyaline basally except for a few brown spots and streaks; pattern in apical half to two-thirds brown with numerous small hyaline spots; cell bc with a brown streak near apex; cell c with brown medial and apical bands; pterostigma narrowly hyaline basally and with a hyaline subapical spot.

Abdomen densely blue-grey tomentose, covered with fine pale pubescence.

*Etymology.* The name 'multipunctata' is derived from the numerous hyaline spots in the wing pattern.

*Distribution.* Only known from Lord Howe Island, c. 800 km NE of Sydney.

*Comments.* This species most resembles *P. pantosticta* (Hardy & Drew), differing primarily in its larger size and in wing pattern details, the wing less uniformly spotted basally and the spots arranged a little differently; in *P. multipunctata* there is a gap in the upper row of hyaline spots in cell r<sub>4+5</sub> whereas there is no gap in *P. pantosticta*.

*Parahyalopeza pantosticta* (Hardy & Drew), comb. n.

*Comments.* This species occurs from SE Queensland to Tasmania and has been bred from *Helichrysum* and *Calotis*. Transferred from *Tephritis*, it better fits the concept of *Parahyalopeza* than *Austrotephritis*. The male glans and elements of the wing pattern are very similar to those of *P. bushi* (see Hardy and Drew 1996) and cell bcu lacks an acute apical extension.



*Peneparoxya minuta* Hardy & Drew

*Comments.* In having only 1 pair of orbital setae and a short pterostigma, this Australian species closely resembles those placed in *Actinoptera* Rondani, differing in the geniculate mouthparts and presence of 4 scutellar setae.

*Tephritis furcata* Hardy & Drew

*Comments.* This species is known only from SE Queensland and is probably introduced. The only true species of *Tephritis* recorded from Australasia, it is very similar to the Palearctic *T. cometa* (Loew) [?= *ludhianaensis* Agarwal & Kapoor] and several Nearctic and Neotropical species (particularly *T. stigmatica* (Coquillett) and *T. labecula* Foote) and is likely to be of Central or South American origin.

**Discussion**

Although the presence of true *Campiglossa* in Australia remains unconfirmed (*C. vaga* may be a species of *Scedella* Munro), three species occur in Papua New Guinea (Hardy 1988). *C. paula* (Hering), *C. putrida* (Hering) and *C. stigmatica* (de Meijere) differ from similarly patterned *Austrotephritis* species in the spinose distiphallus (not arranged in a dense rosette as in *Scedella*) and more complex glans in the male and oval spermathecae in the female. In addition, the labella is narrower and more elongate, while the wing has only a single, often large, hyaline apical spot in cell  $r_{2+3}$ , immediately below the apex of vein  $R_{2+3}$ ; in extralimital species where a second marginal spot occurs this spot is normally small, not distinctly larger than the upper spot as is normally the case in the *Spathulina* and *Tephritis* groups.

Reassignment of several former *Campiglossa* species to *Austrotephritis* necessitates a reappraisal of the placement of *Cooronga* Hardy & Drew and *Quasicooronga* Hardy & Drew. These were placed in the *Campiglossa* group by Hancock (2001) but the larger lower marginal spot in cell  $r_{2+3}$ , overall wing pattern, short mouthparts and well sclerotised male glans suggest they are better placed in the *Tephritis* group, to which they are transferred. They appear to be closely related to *Austrotephritis* and its allies.

Apart from *T. furcata*, discussed above, true *Tephritis* is absent from most of South East Asia and Australasia. Most species in the genus show at least a vestige of an apical fork in the wing pattern and several frequently included species with atypical wing patterns appear to belong elsewhere, e.g. the Fijian *T. pentagonella* (Bezzi) [a synonym of *Scedella formosella* (Hendel)] and the Asian *T. lyncea* Bezzi, *T. coei* Hardy and *T. pishanica* Wang [all referable to *Campiglossa*].

*Euaresta* Loew and *Tetreuaresta* Hendel, introduced into the Australian-Pacific region for weed biocontrol, are referable to the *Dyseuaresta* group which, together with the probably synonymous *Euaerostoides* group, is characterised by having both marginal spots in cell  $r_{2+3}$  normally enlarged. Apart from introductions, this group is essentially confined to the Americas.

Two Hawaiian species currently included in *Neotephritis* Hendel, *N. nigripilosa* Hardy and *N. paludosae* Hardy, do not belong there (A. Norrbom, pers. comm.). They appear to be better placed in *Trupanea* Schrank, despite the presence of four scutellar setae, but are not reassigned formally here.

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